DIGITIZER'S 8 MODES OF OPERATION

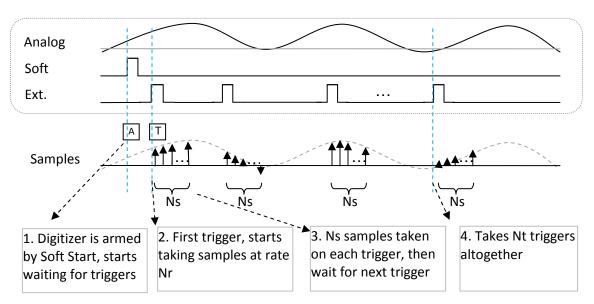
Mode 0 (code: 0x4) – software arm, externally defined sample times

Used Variables:

- Ns number of samples per trigger,
- Nt number of triggers,
- Nr rate of samples

Digitizer will be armed after some condition in software and will take Ns samples (Ns ≥1 programmable) per each external trigger. When the number of triggers will count Nt, the Digitizer will stop digitizing and will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Graphical Description of Mode 0



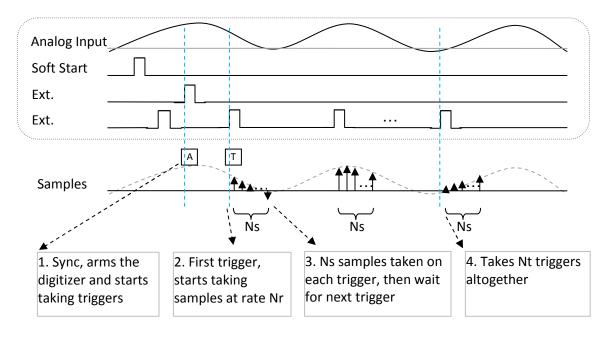
Mode 1 (code: 0xC) – external arm, externally defined sample times

Used Variables:

- Ns number of samples per trigger,
- Nt number of triggers,
- Nr rate of samples

Digitizer will be armed by external SYNC signal and will take Ns samples (Ns ≥1, programmable) per each external trigger. When the number of triggers will count Nt, the Digitizer will stop digitizing and will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Graphical Description of Mode 1



Mode 2 (code: 0x6) – software arm, externally defined sample times within Gate Used Variables:

- Ns number of samples per trigger,
- Nr rate of samples

Digitizer will be armed after some condition in software and ready to take Ns samples (Ns ≥1, programmable) per each external trigger for duration of external Gate signal. Digitizer will stop digitizing after the end of gate signal and will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Analog Input Soft Ext. Ext. Samples Ńs 1. Soft-arms the 2. Gate starts, 3. First trigger, 4. Ns samples taken 5. Gate ends, on each trigger, then digitizer, waits for waiting for starts taking stops sampling Gate triggers samples at rate Nr wait for next trigger

Graphical Description of Mode 2

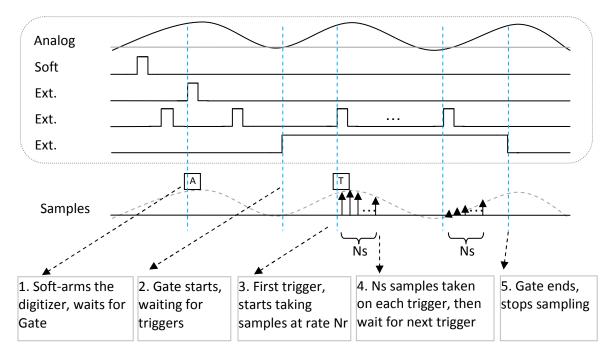
Mode 3 (code: 0xE) – external arm, externally defined sample times within Gate Used Variables:

- Ns number of samples per trigger,
- Nr rate of samples

Digitizer will be armed by external SYNC signal and ready to take Ns samples (Ns ≥1, programmable) per each external trigger for duration of external Gate signal.

Digitizer will stop digitizing after the end of gate signal and will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Graphical Description of Mode 3



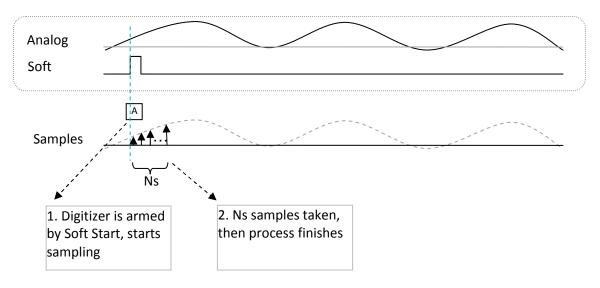
Mode 4 (code: 0x0) – scope with software arm

Used Variables:

- Ns number of samples per trigger,
- Nr rate of samples,

Digitizer will be armed after some condition in software and then will take Ns samples (Ns ≥1, programmable). After that it will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Graphical Description of Mode 4



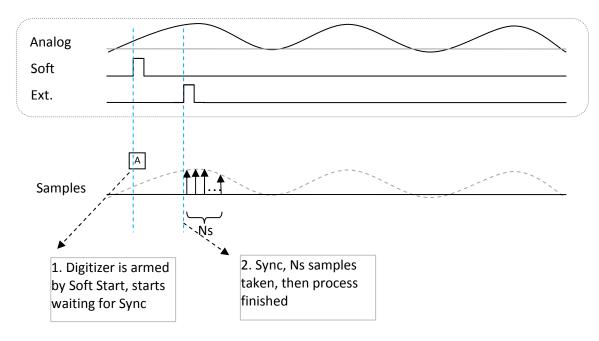
Mode 5 (code: 0x8) – scope with external arm

Used Variables:

- Ns number of samples per trigger,
- Nr rate of samples,

Digitizer will be armed by external SYNC signal and will take Ns samples (Ns ≥1, programmable). After that it will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Graphical Description of Mode 5



Mode 6 (code: 0x2) – scope with software arm during external Gate
Used Variables:

- Nr - rate of samples,

Digitizer will be armed after some condition in software and will take samples for duration of external Gate signal. Digitizer will stop digitizing after the end of gate signal. After that it will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Analog
Soft
Ext.

1. Soft-arms the digitizer, waits for Gate

2. Gate starts, taking samples at rate Nr, continuously

3. Gate ends, stops sampling

Graphical Description of Mode 6

Mode 7 (code: 0xA) – scope with external arm during external Gate
Used Variables:

- Nr - rate of samples,

Digitizer will be armed by external SYNC signal and will take samples for duration of external Gate signal. Digitizer will stop digitizing after the end of gate signal. After that it will set the VME interrupt request signal. This signal will release by VME acknowledge cycle (ROAK).

Analog
Soft
Ext.
Ext.

Samples

1. Sync, arms the digitizer, waits for Gate

2. Gate starts, taking samples at rate Nr, continuously

3. Gate ends, stops sampling

Graphical Description of Mode 7

The following graph shows the comparison between the eight different modes of operation:

Generic Digitizer Modes of Operation Soft Start Ext. Sync Ext. Trigger Ext. Gate Mode 0 Ńs Mode 1 Mode 2 Ns įΤ Mode 3 Ńs Ns Mode 4 Mode 5 Mode 6 Mode 7

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Gate interval

Samples taken in

A Denotes point of time when mode is activated

Denotes point of time when first trigger is taken